



PATENT

Attorney Docket No. MTI-31529

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Ronald A. Weimer
Serial No. : 09/935,255
Filing Date : August 22, 2001
For : Method of Composite Gate Formation
Group Art Unit : 2813
Examiner : CHEN, Jack S. J.
Confirmation No. : 1208

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**SECOND RESPONSE TO RESTRICTION REQUIREMENT
AND PRELIMINARY AMENDMENT**

Sir:

Restriction Requirement. In response to the Examiner's requirement for an election of species, mailed November 19, 2002, in the above-identified patent application, Applicant elects Species 1, Claims 1-17, with traverse.

Applicant notes that the election of species is for the purpose of prosecution on the merits, and that Applicant will be entitled to consideration of claims to additional species upon allowance of a generic claim. It is understood that if the claims of the elected Species 1 are found allowable over the prior art, the Examiner will expand the search to include other species.

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Applicant traverses the Examiner requirement for election of species.

Generic Claim. First, contrary to the Examiner's statement, Applicant submits that Claim 1 is generic to all of the pending claims. An examination of each of the claims will confirm that *each claim* includes all of the limitations of Claim 1:

- Elected Claims 2-17 and new depending Claims 97-121 directed to methods of forming a nitride layer;
- Claims 18-27 and 73-85 also directed to methods of forming a nitride layer;
- Claims 28-41 directed to methods of forming a semiconductor device; and
- Claims 42-57 and 86-96 directed to methods of forming a gate electrode.

Each of the pending claims includes the limitations of Claim 1. Accordingly, Applicant submits that the above-listed claims are readable on Claim 1 of Species 1.

Applicant requests reconsideration and withdrawal of the requirement of the election of species. The generic claim (Claim 1) includes sufficiently few species such that a search and examination of all the species at one time would not impose a serious burden on the Examiner.

Errors in Restriction. The Examiner identified Species 22 (Claim 80) as "drawn to method for forming a nitride barrier layer having the specified thickness *by nucleating the dielectric layer with silicon and thermally annealing the silicon in a nitrogen gas.*"

Claim 80 does not recite "nucleating the dielectric layer with silicon" or "thermally annealing the silicon in a nitrogen gas."

Improper Restriction. Applicant respectfully submits that the classification of the claims into thirty-two (32) separate species is not only burdensome but also unwarranted.

Except for 5 of the 32 species,¹ the Examiner has identified single independent claims as separate species (in bold):

1 — Claims 1, 5, 7, 8, 9, 16, 17 — and depending Claims 2-4, 6, 10-15

2 — Claim 18

3 — Claims 19 and 20 — and depending Claims 21-22

4 — Claim 23 — and depending Claim 24

5 — Claims 25 and 26

6 — Claim 27

7 — Claims 28 and 38 — and depending Claims 29-35

8 — Claim 37

9 — Claim 39 — and depending Claim 40

10 — Claim 40

11 — Claims 42, 43, 44

12 — Claim 45

13 — Claim 46

14 — Claim 47 — and depending Claim 48

15 — Claim 49 — and depending Claim 50

16 — Claim 51

17 — Claim 52

18 — Claim 53 — and depending Claims 54-57

19 — Claim 73 — and depending Claim 74

20 — Claim 75

21 — Claim 76 — and depending Claims 77-79

22 — Claim 80

23 — Claim 81 — and depending Claim 82

24 — Claim 83 — and depending Claim 84

25 — Claim 85

26 — Claim 86

27 — Claim 87

28 — Claim 88

29 — Claim 89

30 — Claim 90

31 — Claim 91

32 — Claim 92 — and depending Claims 93-96

¹ Species 1, 3, 5, 7 and 11 include more than one independent claim.

The Examiner has not provided any good basis or a reasoned argument for requiring restriction of the claims into *32 separate species*.

As one example, the Examiner merely identified Species 1 and 19, as follows:

Species 1 (Claims 1-17) as "drawn to a method for forming silicon nitride barrier layer by exposing the silicon layer to nitrogen-containing species."²

Species 19 (Claims 73-74) as "drawn to a method for forming a nitride barrier layer by exposing the silicon to a nitrogen gas."

As another example, the Examiner identified Species 4, 5 and 6, as follows:

Species 4 (Claims 23-24) as "drawn to method for forming nitride barrier by exposing the silicon layer to a plasma source of a nitrogen-containing species."

Species 5 (Claims 25-26) as "drawn to method for forming nitride barrier by exposing the silicon layer to a remote microwave plasma source of a nitrogen-containing species."

Species 6 (Claim 27) as "drawn to method for forming nitride barrier by exposing the silicon layer to an inductive couple plasma source of a nitrogen-containing species."

MPEP § 803 (Restriction - When Proper) states as follows:

"...an application may properly be required to be restricted to one of two or more claimed inventions *only if they are able to support separate patents* and they are either independent...or distinct.

If the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits...."

CRITERIA FOR RESTRICTION BETWEEN PATENTABLY DISTINCT INVENTIONS

There are two criteria for a proper requirement for restriction between patentably distinct inventions:

(A) The inventions must be independent ...or distinct as claimed...

(B) There must be a serious burden on the examiner if the restriction is required...

...a serious burden on the examiner may be *prima facie* shown if the examiner shows by appropriate explanation of separate classification, or separate status in the art, or a different field of search...

² Claims 1-5, 7-13 and 16-17 have been amended to recite the term "gas."